



FIELD BOTANISTS of ONTARIO

Newsletter

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Tulip Tree (*Liriodendron tulipifera*) at Backus Woods – Bohdan Kowalyk

President's Message - <i>Bill Crowley</i> -----	Inside front cover
Field Trip Reports	
Backus Woods - <i>Christopher Zoladeski</i> -----	1
Lichens of the Bruce Peninsula - <i>Joan Crowe</i> -----	3
Prairie Smoke Alvar - <i>Christopher Zoladeski</i> -----	6
Book Review: <i>Ontario's Old Growth Forest</i> - <i>Mike McMurtry</i> -----	8
WILDFLOWER 1985 – 2004: A Full and Worthy Life - <i>Jim Hodgins</i> -----	9
New and Interesting Plant Records from the Credit Valley Watershed and Region of Peel Natural Areas Inventory Project - <i>Charles Cecile and Dawn Renfrew</i> -----	10
The Duff Layer	
Invasive Species - <i>Joan Crowe</i> -----	13
Botanical Roots	
Skin to Skin: Peeled Hemlocks to Leather Boots - <i>Bill McIlveen</i> -----	14

President's Message

It's been a strange season. The weather has had a significant effect on the vigour and blooming dates of many of our favourite wildflowers. I trust that you, like me, have had some low points and, I hope, at least a few high points during the year in spite of the unusual growing season.

I have a permanent reminder in my date book to visit "Carolinian Canada North" (better known as Prince Edward County) on May 5 each year to visit some old friends, namely, Purple Cress, Cut-leaved Toothwort, Twinleaf, White Trout Lily, and Dutchman's-breeches. This year most of these old friends greeted me in mid April, and the majority of my favourite guys and dolls were on their last legs when I led a field trip to The County on May 1.

For the third year in a row, I spent the first week of July in North Bay and Cobalt on a photo workshop. Last year someone asked me if I knew anything about Fireweed. I told her that it tended to grow in locations where fires had occurred. The following day, while photographing a burned out silver refinery, we found a few Fireweed growing amongst the ruins. I had quite a time convincing this lady that I had not transplanted them to the site in order to prove my point. This year I saw a number of large patches of Fireweed in full bloom at sites where there was no evidence of fire. These patches were spectacular and were one of the highlights of my season.

On the way home, I stopped on the Bruce Peninsula to see if Hill's Thistle was in bloom. I've stopped at this location many times and have been either too early or too late. This year I thought I would be too early but in view of the season decided to take the chance. The road sign said "Road Closed - Local Traffic Only". I decided that I was local traffic and found several blooms of Hill's Thistle in pristine condition; another highlight of my season.

Continued on page 5...

Standard source for scientific names and authorities of vascular plants:

Newmaster, S.G., A. Lehel, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. *Ontario Plant List*. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario. Forest Research Information Paper No. 123, 550 pp. + appendices.

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Field Trip Reports

Backus Woods June 19th, 2010

It was on the 19th day of June, Anno Domini 2010, when we met. Mr. Bill Draper, our trip leader assembled an FBO representation in a small parking area in Backus Woods, Norfolk County, on the south side of Highway 24. We were given ample handouts in the form of itinerary sketches, vegetation maps, species lists and reprints of scientific reports about the sites we were to visit. Bill described the phytogeography of Backus Woods, its ownership history and current status. He spent a month last year, surveying the woods and resampling the forest plots that Steve Varga had collected several years earlier. That historical information on the structure and composition of forests forms an interesting background and baseline upon which one can explain ongoing changes in the ecosystems.

Despite logging history in several of its sections, Backus Woods continues to retain its privileged status as one of the very few areas in southern Ontario where some stands closely approach or meet the definition of “old growth”. The area is characterized by a mosaic of old sand dune ridges, interrupted by long former interdunal swales, and exceptionally old trees can be found in both upland and lowland situations.



Poke Milkweed - Julia Marko Dunn (JMD)

We started somewhat in reverse, and first headed towards the forest edge at the highway. On the way, we spotted

Poke Milkweed (*Asclepias exaltata*) and an old stump of American Chestnut (*Castanea dentata*), former unequalled champion of our forests, today reduced to stump resprouts due to chestnut blight killing mature trees. As some asked, Bill explained the differences between the chestnut and beech leaves, the chestnut ones being narrow (rather than ovate), twice as long as those of the beech, and with teeth bristle-tipped (rather than merely toothed). The reason we went over to the road, however, was a handsome specimen of Eastern Flowering Dogwood (*Cornus florida*); at 12 cm diameter and almost an understory tree, it is one of the largest ones still left in the woods, alas with several signs of dieback of lower branches. Before the species was exposed to the anthracnose, flowering dogwood used to grow so densely that it prevented good growth of herbaceous layer by casting too much shade. These days, with most dogwoods gone, a rich forest wildflower flora is present – in a way, a perversely positive effect of the dogwood’s demise.

Back on the main trail and heading south, several interesting plants were observed: a native forest grass that thrives along trails was Grove Meadow Grass (*Poa alsodes*); a relative of the common, much larger and coarser Rice Cut Grass (*Leersia oryzoides*) of open wetlands was the more southern, delicate, hardly rough to the touch, and of woodlands, White Cut Grass (*Leersia virginica*), usually growing in large patches on moist ground; another grass was Nodding Fescue (*F. subverticillata*, syn. *Festuca obtusa*) with its long glossy green leaves; and a nice patch of New York Fern (*Thelypteris noveboracensis*). As we kept walking, we noticed two more chestnut saplings, one at 5.5 cm diameter, another at 10 cm. Continuing with grass species sightings, we noted Broad-leaved Panic Grass (*Panicum latifolium*) growing amongst Rough Woodland Sunflower (*Helianthus divaricatus*).

When we stopped at the trail forks, Bill described the composition of the woods we were passing through, generally upland areas, with four species of oak (white, *Quercus alba*; red, *Q. rubra*; black, *Q. velutina*; and bur, *Q. macrocarpa*), abundantly growing Red Maple (*Acer rubrum*) thanks to its wide ecological tolerance and fire suppression, American Beech (*Fagus grandifolia*), especially abundant in the regeneration layer, and Eastern White Pine (*Pinus strobus*). In the ridge section where we were standing, Bill pointed at several understory herbs and shrubs, such as Indian Cucumber-root (*Medeola virginiana*), two small northern herbs – Star-flower

(*Trientalis borealis*) and Wild Lily-of-the-valley (*Maianthemum canadense*), Creeping Partridge-berry (*Mitchella repens*), and blueberries – Low Sweet Blueberry (*Vaccinium angustifolium*) and Pale Blueberry (*Vaccinium pallidum*). Despite a brief shower (promised in weather forecasts), we spent some time comparing the two *Vaccinia*, noticing the narrower leaves of *angustifolium* as opposed to the wider leaves of *pallidum*. Also, in that very location, Black Chokeberry (*Aronia melanocarpa*) was indicated to us by Mr. Bohdan Kowalyk, an off-duty MNR official (this was the first of several other minor discoveries that this public servant would make on our trip).

After this initial foray into the wilds of Backus, we formed a convoy and drove to another location, at 4th Concession Line. Right where we parked, we noticed what looked like a Butternut (*Juglans cinerea*) sapling. This gave Bill an opportunity to talk at length about differences between the endangered Butternut and the common Black Walnut (*J. nigra*), and also about hybrids between the Butternut and Japanese Walnut (*J. ailantifolia*), such as presence/absence of terminal leaflets, shape and pubescence of leaf scars, orientation and shape of lenticels, type of hairiness on young branches, and the timing of leaf shedding in the fall.

Our trail initially ran through drier woods, not unlike those we visited in the morning, which were composed of the dominant White Oak and Red Maple, with several Sassafras (*Sassafras albidum*) in the shrub layer or as young trees. Further along the trail, we saw a patch of Stoneroot (*Collinsonia canadensis*), in addition to more New York Fern, Northern Lady Fern (*Athyrium filix-femina*), Cinnamon Fern (*Osmunda cinnamomea*) and Spinulose Wood Fern (*Dryopteris carthusiana*). On that occasion, we learned about differences between the latter and the similar-looking Evergreen Wood Fern (*Dryopteris intermedia*). The *intermedia* has a shorter inner and longer 2nd pinnule (on the lowest pinna), as opposed to *carthusiana*'s longer inner pinnule and shorter 2nd pinnule.

Then, for one of the highlights of the trip: the first sighting of Black Gum (*Nyssa sylvatica*). This would not have been such a big deal, as the species grows in quite a few places in Southern Ontario, were it not for the age of the individuals. Black Gum are among the longest living trees in the province and here, in Backus, the specimens that were cored turned out to be up to 400 years old! Surprisingly, the trees are not exceptionally large, only some 60 cm diameter, but they grow exceedingly slowly, putting on very narrow rings each year. At worst, we could only imagine what the tree we were actually touching must have “seen” in its lifespan, and it was still growing strong with more decades, perhaps a century or

more, to rack up. Another interesting fact was the growth habit of Black Gum: typically, mature trees were surrounded by numerous saplings originating from root suckers. These young guys wait patiently for “mother” to fall down, to replace her and reach for their place in the forest pantheon.

In this Black Gum-dominated swamp, conditions appeared ideal for the provincially rare (S2) Stalked Waterhorehound (*Lycopus rubellus*), growing abundantly at the bases of trees and on heavily decomposed old logs. The soil was about 30 cm of organic layer over sands, as checked by Bill and his auger, thus rendering the swamp mineral, as opposed to organic (classified by a greater than 40 cm organic layer). We found two common sedges there: Bladder Sedge (*Carex intumescens*) was scattered within Cinnamon and Royal Fern (*Osmunda regalis*) while Fringed Sedge (*Carex crinita*) formed its individual patches. Nearby, and on slightly higher ground, grew White Oak and Tulip Tree (*Liriodendron tulipifera*) with its magnificent straight trunks (as for Mr. Kowalyk, he entertained us, pointing to the differences between the look-alike leaves of Black Gum and Spicebush [*Lindera benzoin*], indeed similar in shape, the easiest way to tell them apart being the pleasant lemon scent of Spicebush leaves when crushed.)



Trip leader Bill Draper measures an impressive Black Gum – Bohdan Kowalyk (BK)



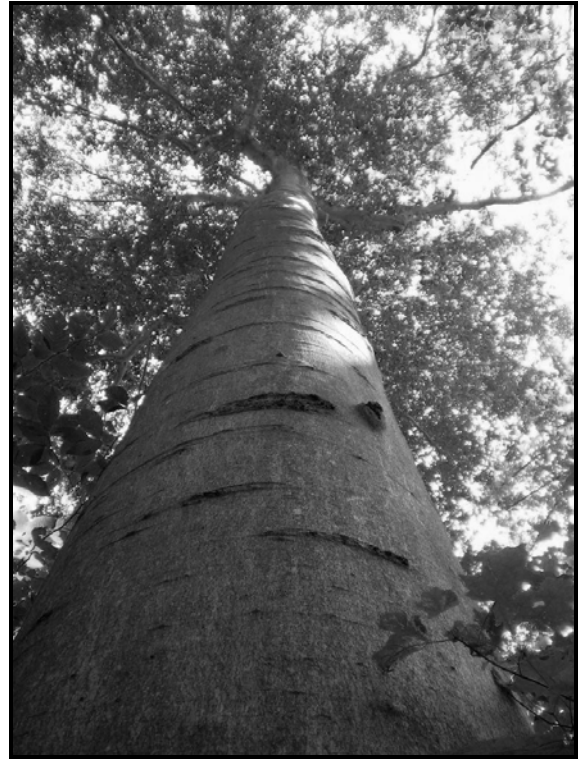
Black Gum leaves – JMD

After lunch in the shade of trees on the road side, we moved a few hundred metres eastward to look at a mature maple-beech forest on a dry-mesic site. At the beginning of the trail, in an open sandy situation, there were a few plants of the rare (S2) Early Blue Violet (*Viola palmata*), more common Spear Wild Licorice (*Galium lanceolatum*), also indicative of dry habitats, and widespread Ebony Spleenwort (*Asplenium platyneuron*). The woods had less Red Maple, compared to the stand walked earlier in the day, and more Sugar Maple and Tulip Tree. In the understorey, among other plants, we saw Running Strawberry-bush (*Euonymus obovata*), Woodland Sedge (*Carex blanda*) and False Solomon's Seal (*Maianthemum racemosum*). In an adjacent swamp, just paces away, Bill drew our attention to Pumpkin Ash (*Fraxinus profunda*), a mature tree with a characteristic inflated base. As there was no water in the swamp, several people went in, in search of fallen twigs and leaves (which we found) and the long samaras (which we did not find).

The upland stand featured many large trees forming tall, cathedral-like canopies way above our heads. We measured some larger specimens and found a beech 100 cm in diameter which, we guessed, could be easily 300+ years old, and a healthy fellow, too. It gave us great pleasure to walk among these giants and feel so diminutive: by Jove, this was old-growth forest!

I guess, because we found a patch of Shining Fir-moss (*Huperzia lucidula*, syn. *Lycopodium lucidulum*) and Interrupted Fern (*Osmunda claytoniana*) along the trail, Bill suggested sticking with the fern the me and asked people if they were interested in locating Broad Beech Fern (*Phegopteris hexagonoptera*), somewhere on our way out. Yes, absolutely, was the answer, so we slightly

detoured and, after almost giving up at some point, located the fern, several dozen fronds of it, on a lower slope within a mature beech-maple forest. In the vicinity, Yellow Mandarin (*Disporum lanuginosum*) was found (Bohdan Kowalyk).



A towering American Beech (*Fagus grandifolia*) – BK



Broad Beech Fern (*Phegopteris hexagonoptera*) – BK

When, in mid-afternoon, we finally emerged from the bush, we were pleased to see again Bill Crowley coming out from a refuge in the shade (he must have left the group earlier, apparently unnoticed). It was then up to Mr. Crowley and Mrs. Julia Marko Dunn of the FBO executive, to officially thank Bill Draper for organizing

and leading this very interesting and rich in sightings trip, which everybody so enjoyed. 🌲

Christopher Zoladeski



Lichen trip group at Singing Sands Provincial Park - TM

Lichens of the Bruce Peninsula May 9th, 2010

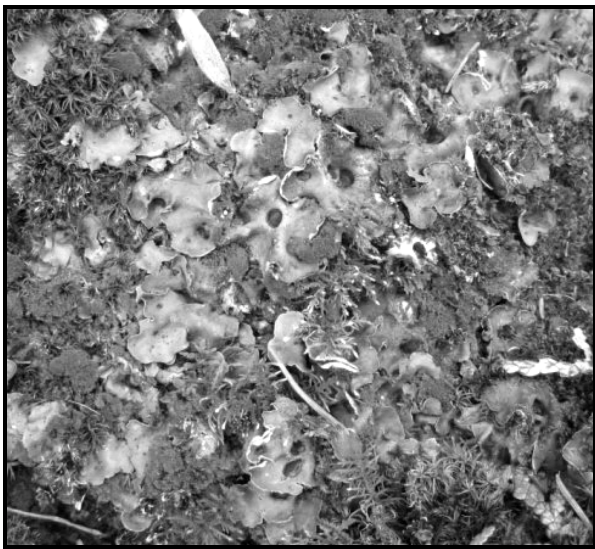
The group met at the National Park visitor centre on a brilliant but cool sunny day. Luckily, it was the day after a frigid snowstorm and gale force winds swept the area. How is that for serendipity? We first viewed the video about the National Park and National Marine Park, which gave us a good background on the physiographical diversity of this area - which makes it such a unique venue for botanists.

Trip leader Troy McMullin reviewed the basic facts about lichen structure and reproductive strategies. Taxonomically, the emphasis is on the fungal component of the symbiotic pair. The fungus produces spores separately from the resident algae. These have to meet

suitable algae when they germinate in order to reconstitute the lichen. However, many lichens produce asexual powdery structures called soredia which contain both elements. Tiny finger-like protrusions from the thallus, known as isidia, serve the same purpose and some, like the Reindeer (Caribou) Lichens, simply fragment when dry and regenerate from the fragments. He introduced us to the terms **fruticose** – branching lichens with structures rising above the substrate that, typically, do not have a distinct upper and lower surface; **foliose** – “leafy” lichens which tend to lie flat on the substrate and have a distinct upper and lower surface; and **crustose** – which are embedded in the substrate and cannot be detached. These are useful categories which help us deal with the huge numbers of lichens, although they have no taxonomic significance. Apparently there are *ca.* 17,500 species known to science but they are still not fully documented and it is estimated there may be as many as 28,000. Because they are not one

organism, the taxonomy of this group is probably the most difficult of all. At the lichen foray that took place in the National Park three years ago, leading lichenologists recorded over 300 species.

Although mostly overlooked, lichens have considerable environmental importance. They grow on many substrates initially unavailable to vascular plants such as rocks, tree bark and rotting wood and modify the environment for other species to move in. They release nutrients from the substrate and help prevent erosion. Their capacity for obtaining nutrients from the atmosphere, precipitation, and water that washes over them makes them very susceptible to pollution. As a result, they are good indicators of the health of the atmosphere. They are important to many species of vertebrates and invertebrates for food and shelter. For example, many bird species use lichens as nesting material. In some parts of the world they are used in food products and as dyes. Some species, such as *Usnea* sp. and *Cladonia arbuscula* s. lat. (which includes *C. mitis*), have been used for their antibiotic properties. They are also used as decorations, for example, in model railways and architectural models. All of these activities make them susceptible to over-harvesting as they are very slow-growing. Development too, can completely destroy lichen habitat.



Common Chocolate Chip Lichen (*Solorina saccata*) - TM

We took our first walk in the rocky, shoreline forest of cedar, birch, fir and aspen behind the visitor centre. Mealy Pixie Cups (*Cladonia chlorophaea*) and Common Powder Horn (*Cladonia coniocraea*) were abundant and we saw them on all the sites we visited. *Lepraria lobificans* with

its leprose growth form was common at the base of the cedars, also *Lecanora* spp. and there were unidentifiable patches of grey sterile crustose lichens on the cedar bark. Three common lichens on the tree branches, found throughout the trip, were the fruticose *Evernia mesomorpha* and the foliose *Parmelia sulcata* and *Hypogymnia physodes*. *Cladonia squamosa* was spotted on the edge of the path. A really unusual sight on a polypore fungus was the Stubble Lichen (*Phaeocalicium polyporaenum*) with its tiny pin-like fruiting bodies. Not something you would notice until it was pointed out to you and where the lenses we were asked to bring came in very handy. Several other species of Stubble Lichen in the Caliciales were seen on wood throughout the day, but were not specifically identified. It should be noted that it is often not possible to name lichen species accurately without microscopic examination and/or chemical testing of a specimen. We also noticed the fluffy, bright orange, alga *Trentepohlia* sp. on the rocks. This is easily mistaken for a lichen until you put it under the microscope and see the rectangular cells which do not occur in lichen hyphae.

After lunch we headed off to Singing Sands Provincial Park and walked through the lowland deciduous forest, dominated by Sugar Maple, to the shoreline alvar. We were somewhat distracted from the lichens by the carpets of Birdseye Primrose (*Primula mistassinica*) in full bloom and the globally rare Dwarf Lake Iris (*Iris lacustris*) just coming out. The whitish-gray crustose *Phlyctis argena* was on live cedar bark. This was tested with Potassium Hydroxide solution and it turned red, which is the identifying feature. The foliose *Melanelixia* (formerly *Melanelia*) *subaurifera* was growing on a twig. A number of fruticose lichens were on the ground. The reindeer lichens, *Cladonia rangiferina* and *Cladonia arbuscula* (including *C. mitis*) were prevalent.

Also spotted was Trumpet Lichen (*Cladonia fimbriata*) with its thin cups, as well as Pebbled Pixie Cup (*Cladonia pyxidata*), and the less common Pixie Cup (*Cladonia magyarica*). British Soldiers (*Cladonia cristatella*) with its red "hats" was another one in this group. There was a patch of the common Dog Lichen (*Peltigera canina*), on organic litter. The crustose lichens Frosted Rim-lichen (*Lecanora caesiorubella*) and Fluffy Dust Lichen (*Lepraria lobificans*) were on some trees. Cumberland Rock-shield (*Xanthoparmelia cumberlandii*) was found on a granite erratic and Pepper Spore Lichen (*Rinodina* sp.) on moss over rock. Salted Starburst Lichen (*Imshaugia aleurites*) was found on wood. An unusual foliose lichen, Stippleback Lichen (*Dermatocarpon dolomiticum*), occurred on the alvar. Dermatocarpons are also known as Leather Lichens because of their texture, the stippling comes from the perithecia (containing fungal spores) which appear as tiny black dots on the surface. A blackish

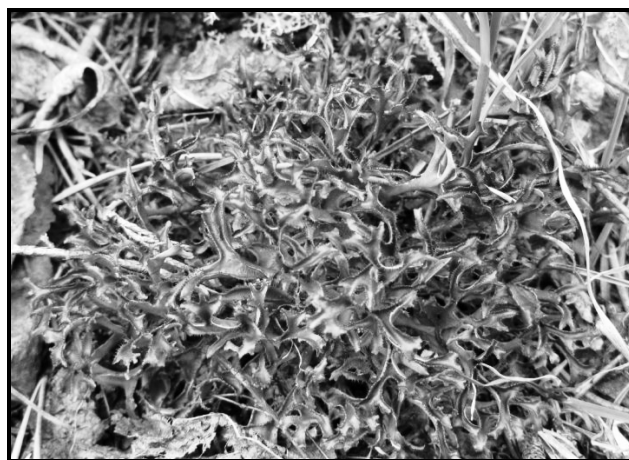
Jelly Lichen (*Collema* sp.) and a crustose *Verrucaria* sp. were also present on the alvar rocks. Another interesting species growing on sand was Sand-loving Iceland Lichen (*Cetraria arenaria*). The cetrarias (often known as Iceland Moss) are really foliose lichens but they rise above the surface. They are very much an arctic-boreal group.



Trumpet Lichen (*Cladonia fimbriata*) – Troy McMullin (TM)

The Halfway Log Dump was our last stop and by far the most interesting. We walked through predominantly deciduous forest to the shoreline, which is edged by moist shaded outcrops of escarpment rocks. A steep cobble beach lines the edge of Georgian Bay which, on this occasion, was a brilliant blue. Part of the beach is rock pavement and there are exposed outcrops of layered dolostone. All of which makes a variety of habitats for lichens. The orange Elegant Sunburst Lichen (*Xanthoria elegans*) stood out on a dolostone block. Also on rock were Firedot Lichens (*Caloplaca* spp.) and *Sarcogyne regularis*. On maple trees were Bitter Wart Lichen (*Pertusaria amara*) – identified by its bitter taste (not recommended, unless you know what you are doing!) and Macoun's Wart Lichen (*Pertusaria macounii*), named for Canada's first Dominion Botanist. Also present was Maple Dust Lichen (*Lecanora thysanophora*). We had our first sighting of

Graphis scripta which, as its name indicates, looks as if someone has scribbled on the tree bark and *Hafellia* (*Buellia*) *disciformis* was also recorded. On the trees there were the foliose lichens Common Greenshield (*Flavoparmelia caperata*) and Fringed Wrinkle-lichen (*Tuckermannopsis Americana*), as well as the wrinkled, broad-lobed Lung Lichen (*Lobaria pulmonaria*). The latter, due to its sensitivity to pollution, is a good indicator of a clean atmosphere. *Lecanora rugulosa* was also recorded. On the ground, the Field Dog Lichen (*Peltigera rufescens*) and Scaly Dog Lichen (*Peltigera praetextata*) were found. Over moss on a dolostone block, the foliose Common Chocolate Chip Lichen (*Solorina saccata*) was growing. This can be confused with the *Peltigeras*. After an intensive search, Hanging Fringe Lichen (*Anaptychia crinalis*) was found on the rock pinnacle on the beach and a species of Firedot Lichen (*Caloplaca*) was present. A species of Jelly Lichen (*Collema* sp.) was also seen in this area. Also noted during the day were the Saucer Lichen (*Ochrolechia arborea*) and the Bottlebrush Shield Lichen (*Parmelia squarrosa*), both on bark, and a species of Jellyskin Lichen (*Leptogium* sp.). Surprisingly, considering the cool, moist forest environment, only one species of *Usnea* was seen, on a tree at Singing Sands.



Sand-loving Iceland Lichen (*Cetraria arenaria*) – TM

In all, 50 species of lichens were spotted, which was pretty impressive for an introductory course. Thanks to Troy whose expertise and patience with a diverse group made the day a very pleasant and rewarding experience for all the participants. 🍄

Joan Crowe
(with editorial assistance from Troy McMullin and Bill McIlveen)



Looking out over Fathom Five National Marine Park - TM

Prairie Smoke Alvar September 12th, 2009

Friendly curiosity and a brief shopping spree preceded this trip, a companion event to FBO's 25th Annual General Meeting held in Orillia. Our trip leaders were Mrs. Margo Holt and Miss Kyra Howes. Mrs. Holt is the author of a book on alvar plants titled "Alvar Specialty Plants of Central Ontario" (cash and good cheques were presented and accepted for the purchase of the book) and Miss Howes is the Stewardship Coordinator for The Couchiching Conservancy and the Nature Conservancy of Canada on the Carden Plain.

Miss Howes explained that the area we were about to visit was a new acquisition that would complement other Nature Conservancy possessions on the Carden Plain. In her opinion it is one of the prettiest alvars in Ontario. Together, the properties preserve the highest quality alvar habitats; now they will be saved in perpetuity without the danger of conversion to quarries.

We began our leisurely trek in the best weather one could ask for – sunny, warm, no bugs. Our first target was a feature referred to as a limestone grotto. Although the reality turned out to be less dramatic, as it was really a small fault valley hidden in the woods, the spot was indeed quite picturesque.



The group explores the pavements of the Prairie Smoke Nature Reserve – JMD

Back on the open plain, Mrs. Holt explained a few technical terms related to the morphology of the limestone surface. Specifically, *clints* are blocks of limestone and *grykes* (try to pronounce with the trilling “r”, as the word sounds more genuine that way) are fissures or cracks within the limestone pavement. These two terms derive from old names of Scandinavian origin. The area we were visiting was interesting geologically because the granitic Canadian Shield to the north meets here the limestone plain of the south, and this creates interesting combinations of substrates.

At this point our floristic adventure really started, as we stopped in a semi-open community of White Cedar-White Spruce/Common Juniper (*Thuja occidentalis-Picea glauca/Juniperus communis*). There, growing in soil-filled grykes, were Venus’-pride (a peculiar name, also, and better known as Long-leaved Houstonia: *Hedyotis longifolia* or *Houstonia longifolia*). On the pavement we saw Upland White Aster (*Solidago ptarmicoides*), not an aster as the colloquial name says, but a goldenrod with white ray flowers. Here to was Hairy Beard-tongue (*Penstemon hirsutus*) which, interestingly, grows on Manitoulin Island but not on the Bruce Peninsula alvars. Grey Dogwood or Red-Panicked Dogwood (*Cornus foemina* ssp. *racemosa*) was locally common in the tall shrub layer. Other plants were False Pennyroyal (*Trichostema brachiatum*, formerly *Isanthus brachiatus*), and Rock Sandwort (*Minuartia michauxii*), well past its flowering peak. Prairie Smoke (*Geum triflorum*), the quintessential alvar wildflower, was also seen, and we learned that this one is also found (abundantly) on Manitoulin but is absent on the Bruce.



Hairy Beardtongue (*Penstemon hirsutus*) – JMD

Wood Lily (*Lilium philadelphicum*) was spotted along the trail and Margo mentioned that she had occasionally seen the yellow form, rather than the usual orange, on Manitoulin Island. In the vicinity, Ciliate Aster (*Symphyotrichum ciliolatum* or *Aster ciliolatus*) in its beautiful violet bloom was admired. As we entered the truly open expanse of alvar still more plants appeared, for example Kalm’s Brome (*Bromus kalmii*, peak flowering in July) and Tufted Hairgrass (*Deschampsia caespitosa*), the latter covering wide expanses of the pavement. False Pennyroyal was seen again, this time in its inconspicuous bloom. Stones and rocks were covered with the so-called Iceland moss, in reality a lichen (*Cetraria arenaria*) typical of open stone alvars and tundra, with a circumboreal distribution.

Along the trail we observed Slender-leaved Agalinis (*Agalinis tenuifolia*) growing amongst tight low sods of Flat-stemmed Spike-rush (*Eleocharis compressa*). We took a closer look at Knotted Rush (*Juncus nodosus*).



Margo Holt shows the group Northern Dropseed (*Sporobolus heterolepis*) – JMD



Cooper's Milkvetch (*Astragalus neglectus*) seed pods – JMD

Without wrecking the integrity of the whole site, we gently lifted the soil to expose its rhizomes with characteristic tuberous thickenings or nodules (hence the Latin name, although the common name is very descriptive, too).

Exhausted, we rested for lunch.

In the afternoon we found another interesting plant – White Camass (*Zigadenus elegans*). Its old fruit-laden stalks were numerous within the Little Bluestem (*Schizachyrium scoparium*) prairie. At that spot, we bumped against another group of similarly dressed people – these were folks participating in the Little Bluestem Alvar trip, led by Mr. Daniel Kraus of the Nature Conservancy of Canada. Following in their footsteps, we entered the Little Bluestem Alvar. It was there that Mrs. Holt, after a brief search, located another highlight of the trip – Northern Dropseed (*Sporobolus heterolepis*, S3). The round grains were unlike those of other species of dropseed we were familiar with. There was great excitement and photos were taken.

This was the end of the feature trip, but several people opted for the two extras. After a long and bumpy ride on Wylie Road, we stopped to see a few plants of Cooper's Milkvetch (*Astragalus neglectus*, S3), growing just along the road. The second treat, some distance north, was Canada Milkvetch (*Astragalus canadensis*, S4), also growing in the unholy roadside habitat.

The day was then almost complete – splendid weather, interesting plants and great leaders. Off to the AGM in the evening. 🌱

Christopher Zoladeski

Book Review



***Ontario's Old-Growth Forests: a Guidebook Complete with History, Ecology, and Maps* by Michael Henry and Peter Quinby.**

Fitzhenry & Whiteside Limited, 2010, Markham, Ontario. 232 pages.

Botanists, foresters and naturalists will enjoy this new book featuring Ontario's old-growth forests. The book covers a definition of old-growth conditions and a discussion of the biodiversity that old-growth forests support. There is a description of some of the best examples of old-growth forest organized by a combination of the forest regions of Ontario and tree species. The history and ecology of each type of old-growth forest is discussed at the beginning of each chapter. There is a final chapter on conserving old-growth forests, social and environmental issues, and actions that we can take to protect these priceless ecosystems. Understandably, most of the focus of the book is on southern and central Ontario, but there is a chapter on the boreal forest.

The book is written for a non-technical audience. References for each chapter appear at the end of the book and topics are included that will appeal to a general readership. A feature called "How To Be a Forest Detective" discusses how you can use such features as pit and mound topography, soil profile, tree species, stumps and tree branching pattern to determine the past history of a forest.

The definition provided of old-growth forests is a general one, emphasizing not just the age of the trees but also a lack of human disturbance. There is a lot of variability in old-growth ecosystems, based on the environmental conditions, history of disturbance and the species present. Some readers will be surprised at how old some of our Ontario trees are. Ontario's oldest living tree is an Eastern White Cedar, growing on a rock ledge of the Niagara Escarpment. It is estimated to have germinated in the year 688, making it over 1300 years old. Ontario's largest tree is apparently an Eastern Cottonwood growing on the banks of the Thames River near Chatham, and it is 265 cm in diameter and 35 m tall.

The table listing examples of the oldest individual tree species in Ontario will prompt botanists to think of other examples of old trees with which they are familiar. In the Peterborough area for example, I know of a Bur Oak that rivals the specimen on pages 2 and 29, growing right in the city; it almost certainly predates all of the European settlement in the area. A Hop Hornbeam in the Trent University Nature Sanctuary may be one of the oldest in Ontario. I was pleased to discover from reading this book that some of the oldest Eastern Hemlocks in the province are growing nearby in Mark S. Burnham Provincial Park.

Guest authors contribute sections on specialized topics. For example, James Schaefer of Trent University contributes a section on Woodland Caribou. Doug Larson describes the ancient forests of the Niagara Escarpment and Hap Wilson captures the spiritual qualities of old-growth forest in his essay.

I particularly appreciated the guide to selected old-growth forests, including information about history, species composition, age of the oldest known trees, how to get there and walking trails. Is this an opportunity for an FBO field trip to some of the best examples of old-growth forest in Ontario? 🌲

Mike McMurtry

As part of the **American Society of Plant Taxonomists'** outreach efforts, the organization is now on Facebook and Twitter (<http://twitter.com/amsocplanttaxon>). Please become a Fan of ASPT on Facebook and encourage members of your local wildflower organizations to do the same!

WILDFLOWER 1985 – 2004: A Full and Worthy Life

1985 was a watershed year for native plant enthusiasts in the Greater Toronto Region. The traditional style of gardening began to be challenged by individuals and groups. For almost half a century the petrochemical industry which manufactures herbicides, insecticides, fungicides and synthetic fertilizers, in co-operation with the nursery industry which created and flogged anything that would sell such as plant freaks in size, color, double flower parts, and out of region genetic stock, had a stranglehold on the minds and pocketbooks of North American gardeners. At this time almost every yard from Vancouver to Houston, Halifax to San Diego, had some cookie-cutter variation of lawn and production line shrubs and annuals such as variegated euonymus, golden junipers, geraniums, petunias, pansies, marigolds, impatiens and dusty millers. From within this continental culture of garden sterility, arose a few gardeners, (who were often naturalists as well), a few seed companies, botanical gardens, and garden clubs that believed that Nature, especially native plants and wildlife, should be an integral part of all landscaping. The rallying cry was "Garden with Nature, not against Nature!"

From this climate of change, there arose like an overnight puffball, WILDFLOWER magazine and two months later, the Canadian Wildflower Society. Jim French of Unionville, ON and I of Toronto, ON were the prime movers behind this new Canada-wide gardening movement.

Our goal was firstly to publish a popular quarterly magazine devoted to Canada's native flora. Its intended audience was primarily the neophyte native plant gardening community and the long established field botany community. The two groups would be united by a magazine and a formal society.

The mandate of WILDFLOWER was to promote Canada's native botany in all its glorious facets including: art, botany, photography, literature, horticulture and poetry. The style was to be highly visual, the content was intended to be meaty...no dumbing down of articles to appear trendy. The content was designed to appeal to your average high school graduate. At first the articles were only Canadian content, but this soon expanded to North American.

To give us the visual edge in recruiting members for the Society and maximizing store sales, our intrepid Art Director, Zile Zichmanis, selected and commissioned

original botanical art for all 78 issues of WILDFLOWER including the covers. For 20 years, hundreds of artists and poets were given first time exposure in our pages.

Our skyrocketing membership and environmentally radical message encouraged numerous visionary writers to contribute to WILDFLOWER, including: Alice Munroe, David Suzuki, Mirium Rothchild, Michael Pollan, Edward Abbey, Pierre Trudeau, Robert Bateman, Sally and Andy Wasowski, Sigurd Olsen, Gary Snyder, Lorrie Otto, Jack Sanders, and Professors Richard Howard and Peter Wild.

Much of WILDFLOWER's high-voltage creative steady input came from our carefully chosen roster of 30 field editors from all corners of North America. They included: professional writers, authors, landscape architects, ecologists, botanists, librarians, artists, gardeners, photographers, lawyers, teachers, historians, and biologists. These visionaries were a never-ending source of news, ideas, support, articles and direction. Similar praise can be given our artists who supplied thousands of graphics and were never paid a cent, as we never had surplus funds beyond printing and mailing costs.

Our popularity and influence spread to diverse corners as our database revealed that senior's homes, convents, monasteries, museums, nurseries, botanical gardens and prisons were among our peak year 3000 subscribers.

Perhaps our success spawned the seeds of our demise? The Board of Directors of CWS and later NANPS, had to spend more and more time dealing with basic and complex business issues of running a magazine and therefore less time on gardening and field botany planning. In the winter of 2000 the Board voted to cease publishing WILDFLOWER and to commence publishing the less demanding BLAZING STAR, which has successfully carried on the mandate of the Society. At this juncture I purchased WILDFLOWER from NANPS for \$2.00 CAD and published it myself for the next five years, at which time I decided it was time for me to move on to other projects. An extensive search for a new publisher yielded no takers and WILDFLOWER expired, having led a full and worthy life.

Possibly the highest praise for WILDFLOWER came from the International Association for Plant Taxonomy, TAXON 49(3): 611, in which Prof. Rudolf Schmid wrote, "WILDFLOWER is on the endangered serials list. To my knowledge only one library in California, the University of California at Davis, gets WILDFLOWER, and that is not only a pity but also part of the problem – lack of institutional support. As Prof. Richard Howard remarked (pers. comm., Apr. 2000), 'the magazine is too good to

wither away'. I sincerely hope that this engaging and fine 16-year-old serial does not become extinct and that it manages to avoid indexing in this column under 'serials deceased'." ❀

Jim Hodgins

Jim Hodgins was editor of WILDFLOWER for 20 years.

New and Interesting Plant Records from the Credit Valley Watershed and Region of Peel Natural Areas Inventory Project

Credit Valley Conservation, in partnership with the Halton/North Peel Naturalist Club, the South Peel Naturalists' Club, Toronto and Region Conservation Authority, and the Region of Peel, has been conducting a Natural Areas Inventory Project (NAI) throughout the Credit River watershed and Region of Peel.

During the 2008 and 2009 field seasons, a number of natural areas were surveyed as part of the NAI. Ecological Land Classification (ELC) mapping was undertaken and vascular plant species lists were compiled for each natural area. Because of these surveys, several new and interesting plant species records for the Credit watershed and the Region of Peel were documented.

The Credit River watershed is located along the western edge of the Greater Toronto Area (GTA) and includes parts of the Region of Peel, the Region of Halton, Wellington County and Dufferin County. As these areas are facing tremendous development pressures, it is imperative to know and understand the existing natural heritage system in order to protect key natural areas and maintain a healthy natural environment for all.

The NAI will compile existing records and collect new natural heritage data for the Credit watershed and Peel Region, resulting in an accessible single source of this data. Species distribution and status in the study area will also be documented, including invasive and exotic species. This information will then be available in a municipal and watershed context. It will support further education of the public, stewardship initiatives, and protection and sound ecosystem management to ensure long-term community health. Many of the properties inventoried are privately owned. The cooperation of landowners in granting permission for access for the purpose of this survey work is greatly appreciated.

The following list includes some of the more interesting vascular plant species that were documented in various natural areas of the study area during 2008 and 2009. The status of these plant species was determined using the Credit Valley Conservation 2008 Species List Database, Distribution and Status of the Vascular Plants of the Greater Toronto Area by Varga et al. (2000), The Vascular Plant Flora of Peel County by Jocelyn Webber (1984), The Vascular Plant Flora of the Region of Peel and the Credit River Watershed by Jeff Kaiser (2001), The Flora of Wellington County by Richard Frank & Allan Anderson (2009) and Flora of North America North of Mexico website (1993+). The species are listed in alphabetical order:

***Acorus americanus* (Sweet Flag)**

Found (2008-09) in the Star area of Caledon, the area of Caledon Lake, near Brisbane in Erin and northeast of Cataract. This wetland species was previously known in Peel Region from only a few stations and is considered rare in the watershed and in the GTA.

***Brachyelytrum erectum* (Bearded Short-husk Grass)**

Found (2008-09) in the Star area of Caledon, also near Brisbane in Erin and in the Caledon Lake area. This woodland grass was previously known in Peel Region only from moist rich deciduous forest at Lorne Park in Mississauga. It is considered rare in the Credit watershed and in the GTA.

***Calamagrostis stricta* ssp. *inexpansa* (Narrow Reed Grass)**

Found (2009) in the area of Caledon Lake. Narrow reed grass was found growing in a meadow marsh and a fen-like wetland but is more characteristic of the sandy shores of Lake Huron and north to the James Bay lowlands. It is new for the watershed and for Peel Region and is considered rare in the GTA.

***Callitriche palustris* (Marsh Water-starwort)**

Found (2009) along the Credit River near Orangeville, also near Caledon Lake and northeast of Cataract. It is considered rare in the watershed and rare in the GTA.

***Callitriche hermaphroditica* (Autumn Water-starwort)**

Found (2009) in the area of Caledon Lake. This aquatic species was located in a small stream that flows into Caledon Lake. It is a new species for the watershed, for Peel Region and for the GTA.

***Cardamine bulbosa* (Bulbous Watercress)**

Found (2009) near Brisbane in the Town of Erin. The previous most recent record in the watershed is 1927 from Port Credit in Mississauga. Bulbous watercress is a

wetland species that is considered rare in the watershed and rare in the GTA.

***Carex atherodes* (sedge)**

Found (2008-09) at two locations, one west of Caledon East and the other northeast of Cataract. This wetland sedge was previously known in the watershed from only one station. It is considered rare in the watershed, in Peel Region and in the GTA.

***Carex backii* (sedge)**

Found (2009) near Ballinafad. This spring-blooming, woodland sedge is new for Halton Region and the watershed. It is also considered rare in the GTA.

***Carex castanea* (sedge)**

Found (2008-09) north of Binkham and also in the Caledon Lake area. This sedge is characteristic of moist mixed coniferous woods and was previously known in Peel Region only from moist thickets at Caledon Lake. It is considered rare in the watershed, in Peel Region and in the GTA.

***Carex chordorrhiza* (sedge)**

Found (2009) near Brisbane in the Town of Erin. This sedge is generally found in sphagnum bogs and is new for the watershed. It is also rare in Wellington Co. and in the GTA.

***Carex formosa* (sedge)**

Found (2009) south of Brisbane in the Town of Erin. This woodland sedge is new for the watershed. It is considered rare in the GTA and has been recently removed from the Ontario Rare Vascular Plant list (Oldham & Brinker, 2009).

***Carex oligosperma* (sedge)**

Found (2008) in the Star area of Caledon. This is another bog species that is new for Peel Region and the watershed. It is also considered rare in the GTA.

***Carex schweinitzii* (sedge)**

Found (2008) to the west of Caledon East. This sedge, a species of cold streams and seeps with highly calcareous soils, is provincially rare (ranked S3) and is new for Peel Region and the watershed. It is also considered rare in the GTA.

***Dryopteris filix-mas* (Male Fern)**

Found (2008-09) in Georgetown and also near Alton in Caledon and south of Brisbane in Erin. Male Fern was found growing in rocky woods and is new for Halton Region. It was previously known from only a few stations

in Peel Region and in Wellington Co. and is considered rare there as well as in the GTA.

***Epilobium strictum* (Soft Willow-herb)**

Found (2009) in the Caledon Lake area. This species was located in a boggy wetland within a coniferous swamp. It is new for the watershed and was previously known from only one station in Peel Region. It is considered rare in the GTA.

***Glyceria canadensis* (Rattlesnake Manna Grass)**

Found (2008) in the Star area of Caledon. This beautiful grass of acid or boggy conditions was previously known in Peel Region from sphagnum mats at Gibson Lake and Teapot Lake. It is also rare in the watershed and in the GTA.

***Juncus brevicaudatus* (Short-tailed Rush)**

Found (2009) in the Caledon Lake area and also south of Brisbane in the Town of Erin. This wetland species is new for Wellington Co. and was previously known in Peel Region from only two stations. It is considered rare in the watershed and in the GTA.

***Muhlenbergia glomerata* (Wild Timothy)**

Found (2009) in the Caledon Lake area. Wild timothy was located in a meadow marsh and a fen-like wetland. The previous most recent record in Peel Region is from 1910 from Snelgrove. This species is also rare in the watershed and in the GTA.

***Pogonia ophioglossoides* (Rose Pogonia)** – Found (2009) south of Brisbane. This beautiful, little orchid was located in a boggy wetland. It was previously known in Wellington Co. from only two stations. It is considered rare there as well as in the watershed and in the GTA.

***Ribes lacustre* (Bristly Black Currant)**

Found (2009) in the Caledon Lake area. This species has a decidedly more northern distribution in Ontario. It is new for the watershed and was previously known in Peel Region from only one station. It is considered rare in the GTA.

***Selaginella eclipes* (Meadow Spike-moss)**

Found (2009) in the Caledon Lake area and also in Hillsburgh. Meadow spike-moss is a small, easily overlooked species that is a member of the Fern Allies. The only previous record in Peel Region and the watershed was from 1945 at Forks of the Credit. It is considered rare in the GTA.



Rose Pogonia (*Pogonia ophioglossoides*) - JMD

***Sorbus decora* (Showy Mountain-ash)**

Found (2009) in the Caledon Lake area. This small tree is generally found further north in Ontario. It is a new species for the watershed, for Peel Region and for the GTA.

***Sparganium natans* (Least Burreed)**

Found (2009) south of Brisbane in the Town of Erin. This is the smallest burreed species in Ontario. It is new for the watershed and for Wellington County and is considered rare in the GTA.

***Spiranthes romanzoffiana* (Hooded Ladies'-tresses)**

Found (2009) in Hillsburgh. This small orchid has very fragrant flowers. It is new for the watershed and was previously known from only two stations in Wellington Co. where it is rare. It is also considered rare in the GTA.

***Symphotrichum boreale* (Bog Aster)**

Found (2008-09) near Ballinafad in Halton Region, in the Monora Park and Island Lake areas in Dufferin Co., and in the Caledon Lake area. Bog aster was previously known in Peel Region only from fens at Caledon Lake. It is also considered rare in the watershed, in Halton Region and in the GTA.

***Torreyochloa pallida* var. *fernaldii* (Torrey's Manna Grass)**

Found (2009) in the Caledon Lake area. This variety of Torrey's manna grass is the more common and northern-ranging variety in Ontario. It is new for the watershed and for Peel Region. The species was considered extirpated in the GTA.

***Trillium undulatum* (Painted Trillium)**

Found (2009) in the Caledon Lake area. This beautiful trillium is most commonly found on the Canadian Shield in Ontario, where acidic soils are prevalent. This is the second recent record for Peel Region and the watershed since an historic record dating from 1947. It was previously considered an historic species in the GTA.

***Utricularia minor* (Small Bladderwort)**

Found (2009) in the Caledon Lake area, in Hillsburgh and south of Brisbane in the Town of Erin. Small bladderwort, found in small pools in boggy and seepage wetlands, was previously known from only one station in both Peel Region and Wellington Co. where it is rare. It is also considered rare in the GTA.

***Viburnum cassinoides* (Wild-raisin)**

Found (2008-09) in the Star area of Caledon, and also in the Caledon Lake area and south of Brisbane. This shrub of damp, acid soils was previously known from only two stations in Peel Region. It is considered rare in the watershed, in Peel Region and in the GTA.

***Zizania palustris* var. *palustris* (Northern Wild Rice)**

Found (2009) in the Caledon Lake area. A large stand of this emergent wetland grass was growing in a small lake. It was previously considered extirpated in the watershed and in Peel Region. It is considered rare in the GTA.

Several non-native vascular plant species were found during surveys that were not previously recorded for the watershed. These are:

***Centaurea x pratensis* (hybrid knapweed)**

Found (2009) northeast of Cataract. This hybrid is also new for Peel Region.

***Deschampsia cespitosa* ssp. *parviflora* (Small-flowered Tufted Hairgrass)**

Found (2009) south of Brisbane in the Town of Erin. This ornamental grass may also be new for the GTA.

***Helleborus niger* (Black Hellebore)**

Found (2009) south of Brisbane. Black hellebore, also known as Christmas-rose because it blooms so early, is an ornamental species that was not considered to persist in the wild. It was reported as an escape in 1880 in New York and in 1919 in Michigan. During surveys in 2009, several small colonies were found to be thriving and spreading in this rocky wooded natural area. This species is also new for Wellington Co. and for Ontario.

***Mycelis muralis* (Wall Lettuce)**

Found (2009) south of Brisbane. This species from northern Europe is growing abundantly in openings in a logged maple forest. It is also new for Wellington Co. and the GTA.

***Picris hieracioides* ssp. *hieracioides* (Hawkweed Oxtongue)**

Found (2009) south of Brisbane and also in Hillsburgh. This native of Eurasia is common in open plantations and edges of forests near these natural areas.

Voucher specimens for many of these records are deposited at the Royal Botanical Gardens herbarium (HAM) in Hamilton. Corrections and/or additions to the above species accounts would be much appreciated.

Botanists and field naturalists are encouraged to submit any personal records of significant plant species from the watershed to Credit Valley Conservation to be included in their database (contact Dawn Renfrew at: drenfrew@creditvalleyca.ca). Also, information on significant birds, mammals, reptiles, amphibians, and other natural heritage features noted in the watershed would be appreciated.

The NAI will continue to document the natural heritage of the Credit Valley watershed in the coming seasons. As complete an understanding as possible of the native flora and other natural heritage features will help ensure their long term protection and conservation. 🌿

Charles Cecile and Dawn Renfrew

Acknowledgements

Natalie Iwanycki of the Royal Botanical Gardens herbarium (HAM) kindly reviewed this article and confirmed the identification of many of the voucher specimens. Dr. Jim Pringle, also at RBG, confirmed several of these specimens. Rick Jordan and Sean Fox of the University of Guelph Arboretum examined and confirmed the *Sorbus decora* specimen. Heather Lynn of Credit Valley Conservation looked up the record for *Trillium undulatum* that she recently discovered in the watershed.

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The duff layer

Invasive Species

From time to time, hysteria erupts about some alien species that is invading the world and destroying all our native plants. For a long time Purple Loosestrife (*Lythrum salicaria*) topped the billing. This plant is originally European but has been in North America for at least 200 years. It is a plant of drying up wetlands, which suddenly became invasive in the last few decades when development and road building, with associated draining of wetlands, accelerated all over North America.

The latest candidate is Common Reed (*Phragmites australis*) which is being touted as a foreign invader destroying our beaches and waterways. It has nothing to do with Australia, *australis* simply means south. It was formerly known as *Phragmites communis*. Under this name, it was listed in a checklist for the Bruce Peninsula produced by the Royal Canadian Institute in 1940 as "Rather common in swampy ground and shallow water". Volume 25 of The Flora of North America published in 2003 says "*Phragmites australis* grows in wet or muddy ground along waterways, in saline or freshwater marshes, and in sloughs throughout North America. Its tall, leafy, often persistent culms and plumose panicles make it one of our easier species to recognize. It is also one of the most widely distributed flowering plants growing in most temperate and tropical regions of the world, spreading quickly by rhizomes. Once established it is difficult to eradicate. Its uses include thatching, lattices, arrow shafts, construction boards, mats and EROSION CONTROL.

I am aware that the University of Guelph is saying that it is an introduced genetic variation that is more invasive, but if it is a variation, it could just as easily have originated here. So, why has it suddenly become invasive? Could it be that the lake levels have been dropping, thus creating more habitat? Or could it be that warming temperatures have favoured it? It could also be true that it is resistant to pollution. There have been many examples of polluted beaches this year. In that case, having it present might be an advantage as it probably absorbs pollutants. It is ridiculous to say that it is threatening the rare species on the sand dunes. It does not grow on dry sand so unless the sand dunes are inundated it will not grow there. The biggest threat to them is the invasive species known as *Homo sapiens*. Does that last word really mean "wise"? So-called invasive species move into disturbed areas sometimes created by natural events such as fires.

Fireweed (*Epilobium angustifolium*) is a good example of that. We don't see much of it these days. Our highly disturbed roadsides are crammed with invasive species, many of them of European origin such as Wild Carrot (*Daucus carota*), Chicory (*Cichorium intybus*) and Bird's Foot Trefoil (*Lotus corniculatus*). However, goldenrods and asters - all native species - are equally invasive. Just look at some of the abandoned fields around here. They are also very invasive in Europe where they were horticultural introductions still highly popular with gardeners.

The fact is that all these species are the first steps in a succession. If left alone, other species will move in gradually and eventually a forest will regenerate but we can never wait that long. Besides, we have to tidy things up so that areas do not change. The danger is that these

"control" measures just recreate the conditions that brought the "invasive" species there in the first place. Also many controls, especially if chemicals are used, go beyond eliminating the undesirable and actually damage the environment. We need to learn to "Leave well alone" and "Let Nature take its course"! 🌱

Joan Crowe

Botanical Roots

Skin-to-Skin: Peeled Hemlocks to Leather Boots

Not far from our front door, we have a large Eastern Hemlock (*Tsuga canadensis*). At 83 cm in diameter, it is not outstandingly large but it has a certain craginess of character. The two side stems that measure 50 and 22 cm DBH also suggest that it is of substantial age. I would like to believe that it is old enough to have seen the last of the Passenger Pigeons in our area. During the 1850's, very large nest colonies were reported to occur in Esquesing Twp. near Georgetown according to an A. Collins of Toronto [Mitchell]. H.P. Moore of Acton gave no date but indicated that thousands of birds nested at Lot 28, Conc. 1, Esquesing Twp. (just west of Fairy Lake). This is almost directly across the road from our home so almost certainly, the species entered upon what is now our property.

How this tree and a few others of the species on the lot managed to remain is uncertain. Perhaps they were still too young and too small at the time to have been subject to the axe but many of its nearby brethren were likely consumed in the drive to obtain materials required by the tanning industry. Although there were many other smaller tanning operations throughout the province, the tanning industry at Acton grew to be the largest in Canada. Our trees are growing less than two kilometers from the centre of that former operation so they seem to have had a guardian angel looking out for them. This account then is the story of the fate of many hemlocks in Ontario.

Tanning of animal hides is known, from Egyptian tomb paintings, to date back at least 5000 years. A primary ingredient in the tanning process is vegetable tannins. Tannins combine with the protein of animal skins, known as collagen, to produce leather. The bark would be ground up and the cattle hides tanned by layering fresh hides with ground bark in vats or barrels, and filling them with water. It took several months for the tanning process to be

completed and it produced hard, rather tough leather. It takes little effort to imagine how unpleasant the operating conditions in such facilities could be.

But despite the working conditions experienced by the labour force, leather was an extremely important commodity prior to the development of plastics. Leather was and is still used to make shoes, harnesses, belts, luggage, and furniture. The importance of hemlock to the tanning industry lies in the fact that the bark of the tree contains 10-13% tannin. Other tree species such as oak, chestnut and some other conifers also contain high amounts of tannin. Vegetable tannins have since been replaced to a large extent by other chemicals; however, before the introduction of these chemicals, the demand for vegetable tannins had played a rather significant role in shaping the forests of North America.

Tanning at Acton, Ontario, started about 1832 [Rowe]. History shows that the buildings associated with the operation were destroyed by fire on a number of different occasions but the industry persisted despite the setbacks. After rebuilding after a fire in 1872, the operation ran into problems with sources of hemlock bark. Prior to this, local farmers could make \$3 to \$4 per cord of hemlock bark delivered to the tannery. After the operation restarted, they needed have bark shipped in from Erin and Eramosa Townships, though not great distances by our standards, at an inflated cost of \$8 a cord. This was too much of a cost increase so the Beardmore Company decided to move their operation to Bracebridge to be closer to the "endless" supply of hemlock bark in the Muskoka and Parry Sound districts. Although various types of tanning were still continued in the meantime, the company moved back to Acton in 1887 because the 'endless supply' of hemlock in the north was showing an end and because other types of materials were being used as substitutes for hemlock bark. The Bracebridge plant was torn down in 1922.

As well as Bracebridge, sizable tanneries were operated at Parry Sound and Burks Falls to be close to the hemlock stands of Parry Sound [Macfie, 1987]. Much of the bark was sold to the Lake Rosseau Lumber Company or to the Conger Lumber Company and much of it was shipped in large quantities to southern Ontario by rail. In the earliest times, the hemlock lumber was not used and simply left to rot in the woods. Later on, the lumber was utilized more extensively with the bark about equaling the value of the logs. In June and early July when the sap would still be flowing, gangs of four men would peel the bark from the cut logs and stack it in little piles, averaging four cords of bark per day. These were 'swamped out' to the roads in the fall and then picked up by sleigh in the winter. Stacks of bark were prepared and shipped out by rail. The attached

illustration based on an undated photo from Boakville in Parry Sound shows a lumberyard with piles of hemlock bark ready for shipment. We know from shipwreck data for Lake Michigan that transportation of hemlock bark by boat was also taking place in the 1880s.



Eastern Hemlock in the author's front yard – W. D. McIlveen

The impact of the tanning industry on the hemlock stands across North America can be seen from the following statistics. In 1900, 1.2 million cords of hemlock bark were harvested in the United States and this accounted for 72 percent of all tannins used. Harvesting operations were carried out over an area of roughly 400 000 ha across eastern United States. The industry was a destructive one, which ultimately led to extensive deforestation of hemlock forests. By the 1930's, hemlock supplied only 18 percent of the raw material for the American tanning industry. As the area of hemlock forest declined, the industry moved further south into the forests of oak and chestnut for alternative sources of tannins. About 2.5 cords of bark were required to tan 100 hides. At this rate, 48,000,000

hides would have been treated with hemlock bark in 1900 in the United States.

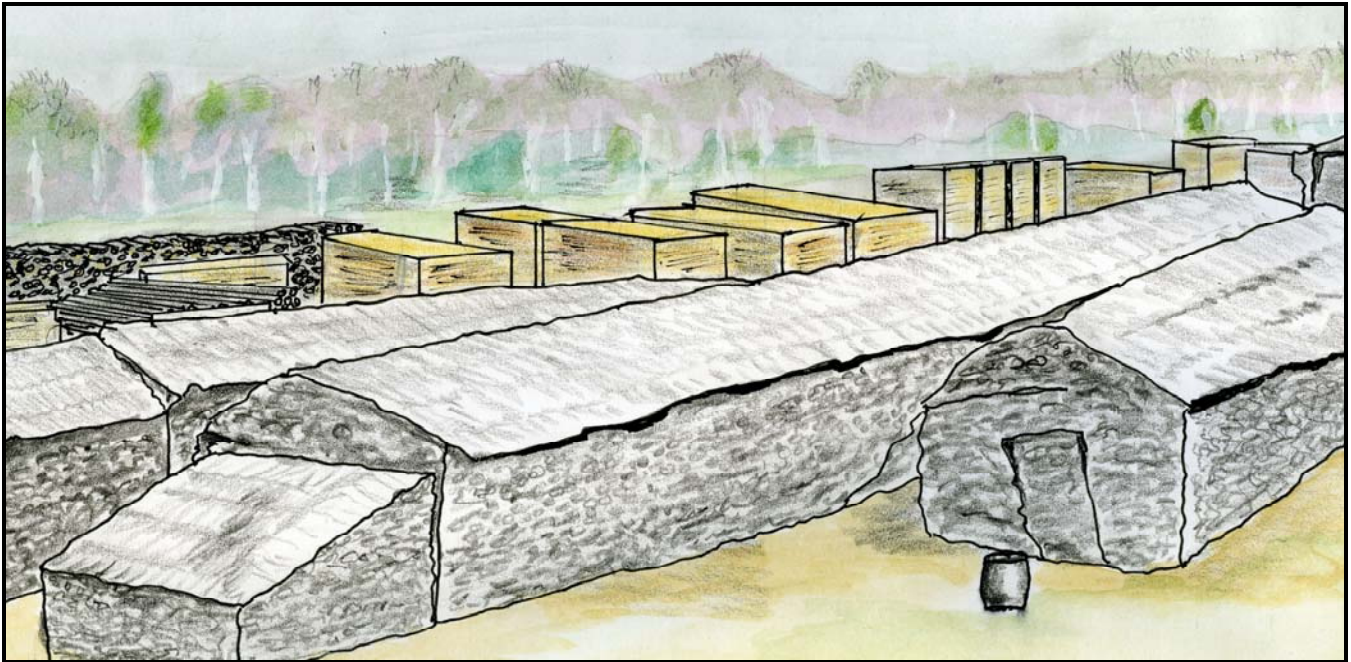
Although it is unlikely that the early rate of leather production came close to this, Rowe [2002] provided one statistic that indicated the Acton tannery alone was processing 50,000 hides per month. Using the United States statistics for comparison, the amount of hemlock forest that would have been used for the Acton operation would have been 5,000 ha per year. While the Acton operation was the largest, there were many small local operations all across the developing part of the province. One contractor had 160 men busy peeling bark in Conger Township, west of MacTier, just to supply the Beardmore tannery in Bracebridge.

Hemlock, as lumber, has only a limited demand in current times but in the past, the species was a much more-useful commodity. The wood is brittle, splinters easily and is knotty, which lowers its value as lumber. Hemlock is used for coarse lumber, rough dimension stock, general construction, boxes, crates, railway ties and pulp. Freshly cut trees do not float well owing to their high moisture content so in the early days of lumbering that relied on rivers for transporting the logs from the forest, hemlock posed a challenge for the lumber industry. Once the logs were relieved of their bark, they were able to dry during the summer and could be easily floated to the mills the following year. As described above, hemlock forests suffered greatly in the past so the present low level of attention is giving them an opportunity to rest and recover in suitable sites. That is a good and welcome thing in my estimation for the species is probably my favourite tree. I am pleased to be able to look out my front window and see the large specimen growing close to the house, a specimen that the fates favoured and allowed to grow instead of being hauled off to a tanning vat. ❧

W. D. McIlveen

References

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- Mitchell, M.H. 1935. The Passenger Pigeon in Ontario. Contribution No. 7 of the Royal Ontario Museum of Zoology. University of Toronto Press. 181 pp.
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Hemlock bark at Boakville – W. D. McIlveen

Goldie Award 2010 Presented to Paul Maycock

In 2007, the Field Botanists of Ontario initiated an award to recognize the contribution of individuals that had made a significant contribution to the advancement of field botany in Ontario. That award is named in honor of John Goldie to recognize his early pioneering surveys of vegetation in the Province. The fourth such presentation of the Goldie Award (2010) was made to Dr. Paul Maycock of the University of Toronto, Mississauga Campus at Erindale in recognition of his outstanding career that helped develop a system for classifying forests in Ontario and elsewhere. A more complete account will be included in the next issue of the Newsletter. Congratulations, Paul!

Niagara Plant Checklist Produced by NHIC

For the past three years the Niagara Peninsula Conservation Authority has been conducting a Natural Areas Inventory (NAI) in its watershed. The Natural Heritage Information Centre (NHIC) has been providing assistance with botanical aspects of this inventory by accompanying NAI field crews during surveys, identification and verification of plant specimens collected by field crews, and producing a vascular plant checklist for Niagara Regional Municipality which will be part of the final NAI report. This checklist indicates the regional and provincial status of vascular plants known from Niagara. To download a PDF copy of the checklist, go to <http://www.npca.ca/water-management/water-planning/natural-areas-inventory.htm>